

BREAKAGE OF BONES DURING MEAT PROCESSING

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 Recently I was thinking about my laboratory studies on bone formation in terms of relevance to domestic avian species. In reading on this topic I discovered a number of studies that identified the types of bones that tend to break during processing

broilers for the meat consumer market. Particularly susceptible are the ribs, wishbone, collar bone, and bones that form the pelvis.

The amount of breakage reported in one study was astounding, with an average of three broken bones occurring per bird after evisceration. Only 3 percent of the birds had any breaks before being stunned. Breakage can occur at any stage of processing, including when birds are put in and removed from transport cages, as a conse-

quence of stunning, during mechanical picking, and during handling along the eviscerating line.

Ribs and pelvic bones tend to be broken during mechanical picking and when carcasses are cleaned following offal removal. Pelvic bones may also break when birds are caught.

The sternum and keel are mainly damaged when birds are caught. Stunning with carbon dioxide or argon gas resulted in fewer broken bones, by about 50 percent, than when electrical stunning is used.

The main problem here is that wing flapping during stunning results in broken wing bones. Both wings and leg bones tend to be stronger than the flat bones (ribs, pelvic girdle, sternum, and keel) because of exercise due to walk-

ing and maintaining balance by wing flapping.

Several ways of reducing bone breakage in broilers can be considered. The first might be to genetically select for the trait of calmness in birds intended for further processing. The birds need to have been fed sufficient amounts of calcium, protein, and other nutrients.

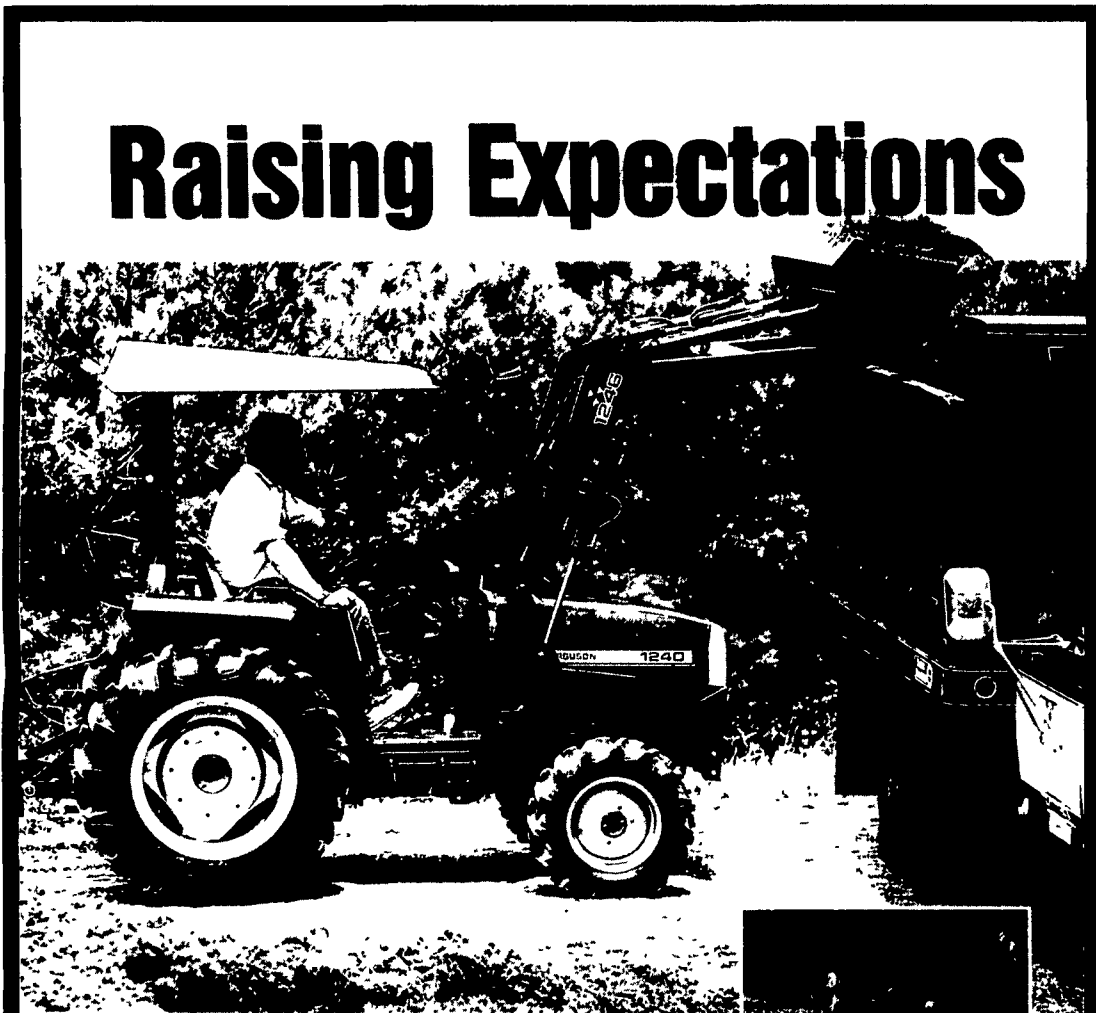
The least damaging stunning method needs to be employed. Personnel who handle live birds need to be made aware of the need for gentle handling techniques, and shown what those techniques are. An evaluation of handling

procedures during picking and along the eviscerating line would likely reveal some problems to which appropriate adjustments could be made.

No easy means of assessing breakage exists. Palpation can reveal larger broken bones; however, dissection is more likely necessary to reveal smaller bone breaks.

A non-invasive means of identifying breaks would be to use X-rays. However, X-ray machines are costly and require a fairly high level of technical expertise to operate safely. Special training also is required to know how to "read" an X-ray film.

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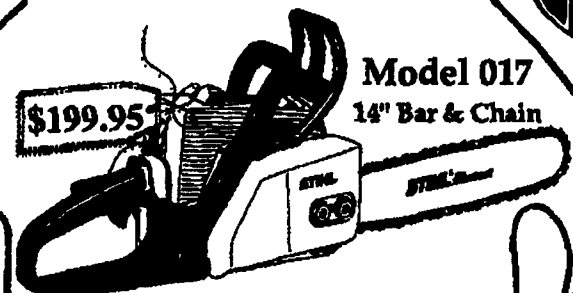
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